Application No. 09/476,613
Amendment dated March 16, 2004
Response to Office Action of October 14, 2003

Atty. Docket No. 042390.P7493
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Amendments to the Claims

Please amend the claims as indicated below. All claims are listed below, with amended claims so marked. This listing of claims will replace all prior versions, and listings, of claims in the application:

1 1. (Currently Amended) A method for sharing processing capabilities of
2 utilizing multiple network interfaces among said network interfaces, comprising:
3 receiving a first network data to be transmitted by a first network interface
4 according to a protocol;
5 determining whether the first network interface includes hardware supporting[s]
6 the protocol;
7 if the protocol is not supported, then providing said first network data to a second
8 network interface including hardware supporting the protocol for processing of said first
9 network data into a second network data according to the protocol; and
10 transmitting said second network data with said first network interface.

11 2. (Original) The method of claim 1, wherein the first network interface
12 does not support the protocol, the method further comprising:
13 presenting said first and second network interfaces to a protocol stack as being a
14 homogeneous team of network interfaces.

15 3. (Original) The method of claim 1, wherein the protocol includes
16 encrypting the first network data before submitting said first network data to a network.

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1   4.   (Previously Presented)   The method of claim 1, further comprising:

2   communicatively coupling a hardware-based encryption processor with said

3   second network interface, said encryption processor performing said processing of said

4   first network data.

5   5.   (Previously Presented)   The method of claim 4, wherein the hardware-

6   based encryption processor supports a primary mode for encrypting network data for

7   said second network interface, and a secondary mode for encrypting network data for

8   said first network interface.

9   6.   (Original)   The method of claim 5, wherein the said first and second

10   network interfaces operate in an adaptive load balancing mode, and wherein said

11   second network interface interleaves said primary mode encryption with said secondary

12   mode encryption.

13   7.   (Previously Presented)   The method of claim 6, further comprising:

14   providing a third network interface supporting the protocol;

15   wherein processing said first network data into said second network data is

16   balanced across said second and third network interfaces.

17   8.   (Original)   The method of claim 7, wherein said balancing is performed

18   according to a workload of said second and third network interfaces.

19   9.   (Original)   The method of claim 5, wherein the said first and second

20   network interfaces operate in an adapter fault tolerance mode, and wherein said first

1   network interface is a primary network interface, and said second network interface is a

2   backup network interface.

3   10.   (Previously Presented)   The method of claim 1, wherein the said first

4   and second network interfaces operate in an adaptive load balancing mode, and

5   wherein said second network interface interleaves processing network data for said

6   second network interface with processing said first network data into said second

7   network data.

8   11.   (Original)   The method of claim 1, wherein the said first and second

9   network interfaces operate in an adapter fault tolerance mode, and wherein said first

10   network interface is a primary network interface, and said second network interface is a

11   backup network interface.

12   12.   (Currently Amended)   A readable medium having encoded thereon

13   instructions for sharing processing capabilities of multiple network interfaces among

14   said network interfaces, the instructions capable of directing a processor to:

15   receive a first network data to be transmitted by a first network interface

16   according to a protocol;

17   determine whether the first network interface includes hardware supporting[s]

18   the protocol;

19   if the protocol is not supported, then provide said first network data to a second

20   network interface including hardware supporting the protocol for processing of said first

21   network data into a second network data according to the protocol; and

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1   transmit said second network data with said second network interface.

2   13.   (Original)   The medium of claim 12, wherein the protocol includes

3   encrypting the first network data before submitting said first network data to a network.

4   14.   (Previously Presented)   The medium of claim 12, said instructions

5   including further instructions to direct said processor to:

6   process said first network data into said second network data with a hardware-

7   based encryption processor communicatively coupled with said second network

8   interface.

9   15.   (Previously Presented)   The medium of claim 14, wherein the

10   hardware-based encryption processor supports a primary mode and a secondary mode,

11   said instructions including further instructions to direct said processor to:

12   encrypt network data for said second network interface when said encryption

13   processor is in said primary mode; and

14   encrypt network data for said first network interface when said encryption

15   processor is in said secondary mode.

16   16.   (Previously Presented)   The medium of claim 15, wherein said first and

17   second network interfaces operate in an adaptive load balancing mode, and wherein

18   said second network interface interleaves said primary mode encryption with said

19   secondary mode encryption.

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1   17.   (Previously Presented)   The medium of claim 16, in which a third

2   network interface supports the protocol, said instructions including further instructions to

3   direct said processor to:

4   balance processing said first network data into said second network data across

5   said second and third network interfaces.

6   18.   (Previously Presented)   The medium of claim 17, wherein said

7   balancing is performed according to a workload of said second and third network

8   interfaces.

9   19.   (Previously Presented)   The medium of claim 15, wherein said first and

10   second network interfaces operate in an adapter fault tolerance mode.

11   20.   (Currently Amended)   In a computing device, a network interface

12   team, comprising:

13   a first network interface lacking <u>hardware</u> support for a protocol; and

14   a second network interface <u>including hardware</u> supporting the protocol, said

15   second network interface configured to process network data for the first network

16   interface if said network data is to be transmitted according to the protocol and to return

17   processed data to the first network interface.

18   21.   (Previously Presented)   The network interface team of claim 20, further

19   comprising:

20   a first receiver, communicatively coupled to said first network interface, for

21   receiving network data to be transmitted by said first network interface;

1   a second receiver, communicatively coupled to said second network interface, for

2   receiving network data to be transmitted by said second network interface; and

3   a transferor, communicatively coupled with said first network interface and said

4   second receiver, and configured to transfer network data to said second network

5   interface for processing according to the protocol.

6   22.   (Currently Amended)   A method for sharing processing capabilities of

7   members of a system of network interfaces among the system members, comprising:

8   determining a first network interface is to transmit ~~the~~ first data having a data

9   configuration;

10   determining the first data is configured in accordance with a protocol ~~a manner~~

11 unsupported by the first network interface;

12   locating a second network interface of the system including hardware that

13 supports the data configuration;

14   secondarily processing by the hardware of the second network interface of the

15 first data in accordance with the protocol into a second data; and

16   providing the second data to the first network interface so that the second data

17 appears to have been processed by the first network interface.

18   23.   (Original)   The method of claim 22, further comprising:

19   selecting the first network interface to transmit the first data based at least in part

20 on a load-balancing of network traffic across the plural network interfaces;

21   performing by a driver for the first network interface of said determining the first

22 data is configured according to the protocol unsupported by the first network interface;

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1   receiving by the driver of the second data, wherein the data is now in a format

2   supported by the network interface; and

3   providing by the driver of the second data to the first network interface.

4   24.   (Currently Amended) A method for distributing network processing across

5   a team of network interfaces cards including at least a first network interface card (NIC)

6   lacking support for a first specialized capability and a second NIC that supports the first

7   specialized capability, the method comprising:

8   receiving first data to be processed and transmitted by the first NIC to a recipient;

9   determining said processing said received the first data requires the first

10   specialized capability unsupported by the first NIC;

11   secondarily processing by the second NIC of the first data into second data with

12   the supported first specialized capability; and

13   providing the second data to the first NIC for transmission to the recipient.

14   25.   (Original) The method of claim 24, wherein the second NIC comprises an

15   application specific integrated circuit providing the first specialized capability.

16   26.   (Original) The method of claim 24, wherein the team of network interfaces

17   include a third network that supports a second specialized capability, the method

18   comprising:

19   aggregating specialized capabilities offered by interfaces of the team; and

20   providing a virtual NIC appearing to provide each of the specialized processing

21   capabilities.